



Henderson County Energy & Fuel Management Report Fiscal Year 2017-2018

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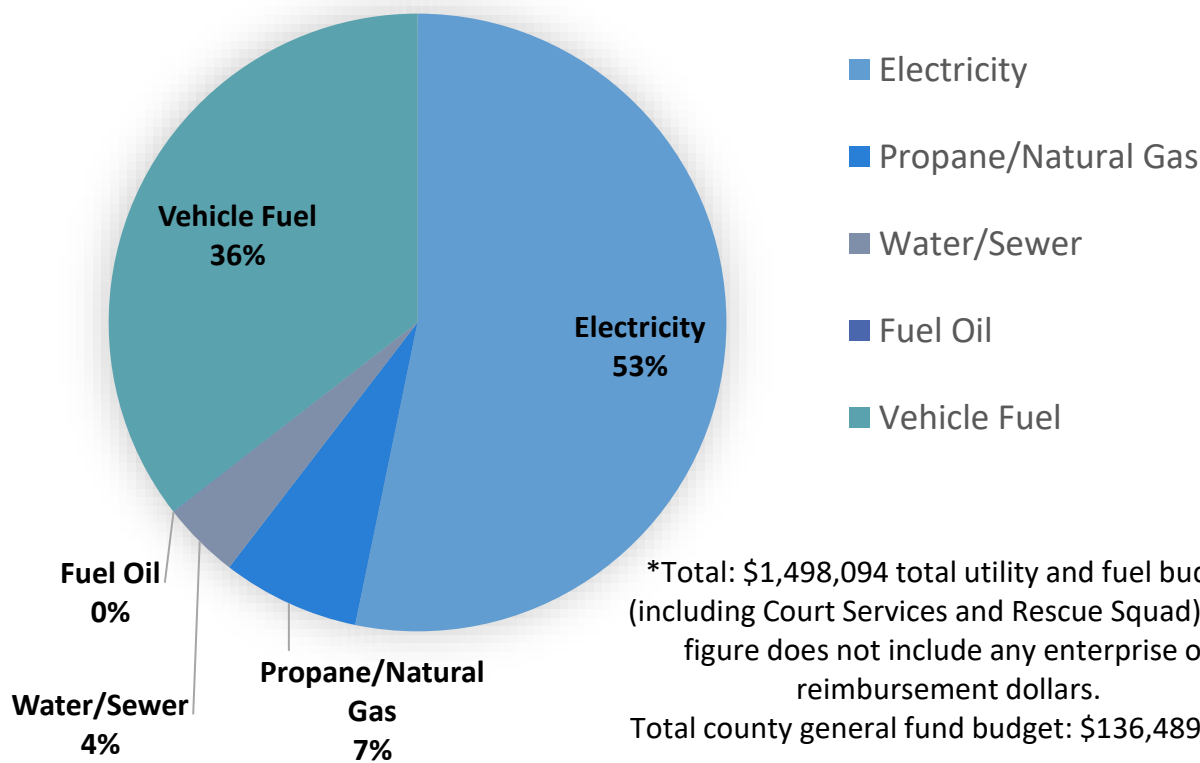
Summary of FY 16-17 Utility & Fuel Budgets by Type and Commodity

This report is a compilation of FY 2017-2018 utility and fuel usage assessing the budgeted versus actual figures of Henderson County departments' consumption of fuel and utilities (electricity, natural gas/propane, water/sewer, fuel oil, unleaded fuel, diesel fuel, and compressed natural gas [CNG]). The data are portrayed in dollars, kWh (kilowatt hours to measure electricity), BTUs (British Thermal Units or Therms as a measurement of heat), and kgal (thousand gallons of water/sewer).

The total county budget approved for FY 17-18 was \$136,489,200. Of this overall budget, the following amounts were allocated to utilities and fuel in the general fund (including Court Services and Rescue Squad as these departments have dedicated general fund line items):

- \$797,184- electricity
 - \$107,950- propane/natural gas
 - \$60,500- water/sewer
 - \$500- fuel oil
 - \$531,960- vehicle fuel (diesel, unleaded, natural gas)
- \$1,498,094 of the total budgeted in FY 17-18 for vehicle fuel and utilities*

FY 17-18 General Fund Utility and Fuel Budget % by Commodity *



Enterprise funds (Solid Waste, Justice Academy, Cane Creek):

- \$49,400- electricity
- \$3,300- propane/natural gas
- \$12,480- water/sewer
- \$0- fuel oil
- \$65,000- vehicle fuel (diesel, unleaded, natural gas)
\$130,180 total budgeted in FY 17-18 for vehicle fuel and utilities

Reimbursements from other agencies (Public Transit, WCCA):

- \$75,600- vehicle fuel (diesel, unleaded, natural gas)
\$75,600 total budgeted in FY 17-18 for vehicle fuel and utilities

In total, all of these allocations make up about 1.1% of the total county budget, approved for FY 17-18 at \$136,489,200

Assessment Methods

This data in this report are broken down biannually, with observations detailing combined figures for Quarters 1-2 (July - December 2017) and Quarters 3-4 (January - June 2018). Financial figures were gathered from end-of-year Munis reports and analyzed with basic formulas using Excel and other methods. Major findings and conclusions throughout this report are shown as italicized text.

The accounts represented in this report are detailed by commodity and department as follows:

DEPARTMENT		ACCOUNT	
115419	FACILITY SERVICES	534001	ELECTRICITY
115419	FACILITY SERVICES	534002	PROPANE/NATURAL GAS
115419	FACILITY SERVICES	534003	WATER/SEWER
115419	FACILITY SERVICES	534004	FUEL OIL
115421	COURT FACILITIES	534001	ELECTRICITY
115421	COURT FACILITIES	534002	PROPANE/NATURAL GAS
115421	COURT FACILITIES	534003	WATER/SEWER
605472	SOLID WASTE	534001	ELECTRICITY
605472	SOLID WASTE	534002	PROPANE/NATURAL GAS
605472	SOLID WASTE	534003	WATER
615711	CANE CREEK	534001	ELECTRICITY
615711	CANE CREEK	534002	PROPANE/NATURAL GAS
615711	CANE CREEK	534003	WATER
635711	JUSTICE ACADEMY	534001	ELECTRICITY
635711	JUSTICE ACADEMY	534003	WATER
115414	ASSESSOR	525001	FUEL COSTS
115419	FACILITY SERVICES	525001	FUEL COSTS
115420	GARAGE	525001	FUEL COSTS
115431	SHERIFF	525001	FUEL COSTS
115432	DETENTION	525001	FUEL COSTS

115434	FIRE MARSHAL/SERVICES	525001	FUEL COSTS
115435	BUILDING SERVICES	525001	FUEL COSTS
115437	EMERGENCY MEDICAL SERVICES	525001	FUEL COSTS
115438	ANIMAL SERVICES	525001	FUEL COSTS
115471	SOIL AND WATER	525001	FUEL COSTS
115491	PLANNING	525001	FUEL COSTS
115492	CODE ENFORCEMENT	525001	FUEL COSTS
115495	COOPERATIVE EXTENSION	525001	FUEL COSTS
115510	PUBLIC HEALTH	525001	FUEL COSTS
115512	ENVIRONMENTAL HEALTH	525001	FUEL COSTS
115531	DEPT. OF SOCIAL SERVICES	525001	FUEL COSTS
115611	LIBRARY	525001	FUEL COSTS
115612	RECREATION	525001	FUEL COSTS
115496	PROJECT MANAGEMENT	525001	FUEL COSTS
115442	RESCUE SQUAD	525001	FUEL COSTS
335497	PUBLIC TRANSIT	525001	FUEL COSTS
605472	SOLID WASTE	525001	FUEL COSTS
615711	CANE CREEK	525001	FUEL COSTS

COLOR CODES:	ENTERPRISE FUNDS	REIMBURSED COSTS	PARTIAL STATE REIMBURSEMENTS
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Court Services and Rescue Squad have dedicated general fund line items and have therefore been included in general fund analysis. Court Services receives some state and federal financial reimbursements for utilities, whereby consumption monitoring becomes critical for annual planning. Our partnership with Western Carolina Community Action (WCCA) for the Apple Country Transit System does not receive its own approved line item in the Henderson County general fund budget, however; this system is a very large fuel user of our CNG fueling station on Williams Street and we do monitor the fuel usage of WCCA.

Presently, all departments (including enterprise funds and those departments that receive reimbursements) budget their own fuel costs for vehicle usage annually. Fuel usage is also closely monitored for unleaded, diesel, and CNG consumption by department heads, Administration, Finance, and Environmental Programs.

The Facilities Services department utility line items account for electricity, water/sewer, natural gas/propane, and fuel oil consumed in all Henderson County buildings and facilities. This singular designation to this department allows better interpretation of usage information as multiple departments occupy county buildings and facilities, rather than allocating a percentage of utility budgets to each department in a building based on that department's square footage occupancy.

Total Budget View: Approved FY Budget Breakdown by Commodity Category

Total County Budget		\$ 136,489,200							
DEPARTMENT		ACCOUNT		ELECTRICITY	PROPANE/ NATURAL GAS	WATER/ SEWER	FUEL OIL	FUEL COSTS	TOTAL
115419	FACILITY SERVICES	534001	ELECTRICITY	\$ 725,000					\$ 725,000
115419	FACILITY SERVICES	534002	PROPANE/NATURAL GAS		\$ 90,000				\$ 90,000
115419	FACILITY SERVICES	534003	WATER/SEWER			\$ 53,000			\$ 53,000
115419	FACILITY SERVICES	534004	FUEL OIL				\$ 500		\$ 500
115421	COURT FACILITIES	534001	ELECTRICITY	\$ 72,184					\$ 72,184
115421	COURT FACILITIES	534002	PROPANE/NATURAL GAS		\$ 17,950				\$ 17,950
115421	COURT FACILITIES	534003	WATER/SEWER			\$ 7,500			\$ 7,500
605472	SOLID WASTE	534001	ELECTRICITY	\$ 20,000					\$ 20,000
605472	SOLID WASTE	534002	PROPANE/NATURAL GAS		\$ 800				\$ 800
605472	SOLID WASTE	534003	WATER			\$ 11,500			\$ 11,500
615711	CANE CREEK	534001	ELECTRICITY	\$ 26,000					\$ 26,000
615711	CANE CREEK	534002	PROPANE/NATURAL GAS		\$ 2,500				\$ 2,500
615711	CANE CREEK	534003	WATER			\$ 850			\$ 850
635711	JUSTICE ACADEMY	534001	ELECTRICITY	\$ 3,400					\$ 3,400
635711	JUSTICE ACADEMY	534003	WATER			\$ 130			\$ 130
115414	ASSESSOR	525001	FUEL COSTS					\$ 6,250	\$ 6,250
115419	FACILITY SERVICES	525001	FUEL COSTS					\$ 14,000	\$ 14,000
115420	GARAGE	525001	FUEL COSTS					\$ 8,000	\$ 8,000
115431	SHERIFF	525001	FUEL COSTS					\$ 312,500	\$ 312,500
115432	DETENTION	525001	FUEL COSTS					\$ 12,000	\$ 12,000
115434	FIRE MARSHAL/SERVICES	525001	FUEL COSTS					\$ 8,750	\$ 8,750
115435	BUILDING SERVICES	525001	FUEL COSTS					\$ 16,750	\$ 16,750
115437	EMERGENCY MEDICAL SERVICES	525001	FUEL COSTS					\$ 86,250	\$ 86,250
115438	ANIMAL SERVICES	525001	FUEL COSTS					\$ 1,000	\$ 1,000
115471	SOIL AND WATER	525001	FUEL COSTS					\$ 1,000	\$ 1,000
115491	PLANNING	525001	FUEL COSTS					\$ 1,250	\$ 1,250
115492	CODE ENFORCEMENT	525001	FUEL COSTS					\$ 2,350	\$ 2,350
115495	COOPERATIVE EXTENSION	525001	FUEL COSTS					\$ 1,500	\$ 1,500
115510	PUBLIC HEALTH	525001	FUEL COSTS					\$ 2,500	\$ 2,500
115512	ENVIRONMENTAL HEALTH	525001	FUEL COSTS					\$ 15,750	\$ 15,750
115531	DEPT. OF SOCIAL SERVICES	525001	FUEL COSTS					\$ 12,500	\$ 12,500
115611	LIBRARY	525001	FUEL COSTS					\$ 3,750	\$ 3,750
115612	RECREATION	525001	FUEL COSTS					\$ 15,000	\$ 15,000
115496	PROJECT MANAGEMENT	525001	FUEL COSTS					\$ 500	\$ 500
115442	RESCUE SQUAD	525001	FUEL COSTS					\$ 10,360	\$ 10,360
335497	PUBLIC TRANSIT	525001	FUEL COSTS					\$ 75,600	\$ 75,600
605472	SOLID WASTE	525001	FUEL COSTS					\$ 60,000	\$ 60,000
615711	CANE CREEK	525001	FUEL COSTS					\$ 5,000	\$ 5,000
Total				\$797,184	\$107,950	\$60,500	\$500	\$531,960	\$1,498,094
% of utilities budget				53%	7%	4%	0.03%	35%	
% of total county budget				0.58%	0.08%	0.04%	0.00%	0.39%	1.10%
COLOR CODES:	ENTERPRISE FUNDS	PARTIAL STATE REIMBURSEMENTS	REIMBURSED COSTS						

3-Year Comparison of Overall Energy Use from FY 2015-2016 to FY 2017-2018

The table below outlines the overall energy usage of all county facilities and buildings from FY 15-16 to FY 17-18.

Unit of Measurement	2015-2016 Energy Usage at All Facilities	2016-2017 Energy Usage at All Facilities	2017-2018 Energy Usage at All Facilities	Percent Change from Previous Year
kWh	10,381,877	8,216,604	7,839,381	-5%
Therms	178,677	211,035	242,879	15%
Gal	9,821,300	12,058,900	11,349,600	-6%

Utility & Fuel Usage and Cost by Budget Allocation

The following two tables show the budget versus actual costs for utilities and fuel across all departments. These tables are broken down by general fund, enterprise funds, and departments that received partial state or other reimbursement. If a utility was over the projected threshold, department heads were contacted to help provide analysis and input. Note that the energy management data for the public schools and community college are not reflected in the information presented in this RBA.

Quarters 1-2 Assessment

The first table (page 8) reflects Quarters 1-2 of FY17-18 and all commodities and fuel usage are benchmarked for consumption halfway through the year at 50%. This allows departments to recognize the pace at which the approved budget per commodity is being utilized for the first six months of the fiscal year. Should a department use more than 50% of a particular utility or fuel budget within quarters 1-2 of the fiscal year, an appropriate response would be to closely monitor and prepare for less usage in the second half of the year so as to avoid line item budget transfers before the close of the fiscal year.

Of the utilities (electricity, propane/natural gas, water/sewer, and fuel oil), only two departments exceeded the 50% benchmark. Facility Services water/sewer usage exceeded the threshold by 17% and the Court Services water/sewer budget was exceeded by 11%. Of the vehicle fuel budgeted for each department, four departments exceeded the 50% benchmark: Facility Services by 6%, Garage by 297%, Project Management by 146% and Cane Creek by 94%.

Overall, 84% of the utility and fuel budgets were well maintained during the first six months of the fiscal year.

Quarters 3-4 Assessment

The second table (page 9) reflects Quarters 3-4 of FY 17-18 and all commodities and fuel usage are benchmarked for consumption for the final six months of the fiscal year at 100%. This percentage was determined by combining the percentage used in July-December 2017 with the percentage of the budget used from January-June 2018, completing the entire fiscal year.

Of the utilities (electricity, propane/natural gas, water/sewer, and fuel oil), only three departments exceeded the 100% threshold. *Facility Services' propane/natural gas exceeded by 59% and their water/sewer exceeded by 30%. Court Services' water/sewer exceeded by 29%. Of the enterprise funds, only Cane Creek's electricity exceeded the 100% threshold by 9%. All other enterprise fund utilities were well maintained. Of the vehicle fuel budgeted for each department, five departments exceeded the 100% benchmark: Garage by 1143%, Detention by 15%, Project Management by 360%, Rescue Squad by 116% and Cane Creek by 166%.*

Facility Services propane/natural gas exceeded by 59% and water/sewer exceeded by 30%, likely due to the new Health and Science Center having higher costs than projected. Court Facilities exceeded the water utility by 29% likely from leaks that the staff have observed in the older building. The plumbing could be assessed and eventually replaced if deemed appropriate.

The exorbitant Garage fuel budget is due to the department receiving all CNG and motor pool expenses from all other county departments. This issue has since been fixed and the CNG and motor pool expenses are now being allocated to the appropriate departments.

Detention exceeded their fuel budget because they added a transport team of four officers, four vehicles and replaced a transport van. These additions doubled the number of officers available to transport inmates to various parts of the state. Detention also assumes the transport of involuntary commitment transports (IVC). Detention did not designate their fuel budget themselves and these factors may not have been known during the budget process.

Rescue Squad had several out of county and state mutual aid calls during fiscal year 2017-2018. These extended calls generate high fuel use both in transportation and use of generators, boats and UTVs. Cane Creek's electricity exceeded by 9% and fuel exceeded by 166% likely due to the significant rain events last year that caused the generators and pumps to use more energy.

Overall, 71% of the departments stayed well under or just within the budgeted amount for utilities and fuel during FY 17-18.

Total County Budget	\$ 136,489,200	QTR 1-2: Benchmark Usage 50%, July-December 2017
Total County Utility & Fuel Budget*	\$ 1,498,094	
Utilities & Fuel as % of Total County Budget	1.10%	

DEPARTMENT	ELECTRICITY BUDGET	PROPANE/ NATURAL GAS BUDGET	WATER/ SEWER BUDGET	FUEL OIL BUDGET	% BUDGET ACTUALIZED (July-Dec 2016 of 50%)
FACILITY SERVICES	\$ 725,000				44%
FACILITY SERVICES		\$ 90,000			35%
FACILITY SERVICES			\$ 53,000		67%
FACILITY SERVICES				\$ 500	0%
COURT FACILITIES	\$ 72,184				40%
COURT FACILITIES		\$ 17,950			26%
COURT FACILITIES			\$ 7,500		61%
Total	\$797,184	\$107,950	\$60,500	\$500	
% of utilities & fuel budget	53%	7%	4%	0.0%	
% of total county budget	0.58%	0.08%	0.04%	0.00%	

ENTERPRISE FUND	ELECTRICITY BUDGET	PROPANE/ NATURAL GAS BUDGET	WATER/ SEWER BUDGET	FUEL OIL BUDGET	% BUDGET ACTUALIZED (July-Dec 2016 of 50%)
SOLID WASTE	\$ 20,000				42%
		\$ 800			0%
			\$ 11,500		34%
Total Utility Budget	\$ 32,300				
CANE CREEK	\$ 26,000				44%
		\$ 2,500			12%
			\$ 850		40%
Total Utility Budget	\$ 29,350				
JUSTICE ACADEMY	\$ 3,400				47%
			\$ 130		41%
Total Utility Budget	\$ 3,530				

DEPARTMENT	VEHICLE FUEL COSTS BUDGET	% BUDGET ACTUALIZED (July-Dec 2016 of 50%)
ASSESSOR	\$ 6,250	38%
FACILITY SERVICES	\$ 14,000	56%
GARAGE	\$ 8,000	302%
SHERIFF	\$ 312,500	36%
DETENTION	\$ 12,000	47%
FIRE MARSHAL	\$ 8,750	42%
EMERGENCY MEDICAL SERVICES	\$ 86,250	37%
BUILDING SERVICES	\$ 16,750	38%
ANIMAL SERVICES	\$ 1,000	42%
SOIL AND WATER	\$ 1,000	20%
PLANNING	\$ 1,250	10%
CODE ENFORCEMENT	\$ 2,350	22%
COOPERATIVE EXTENSION	\$ 1,500	22%
PUBLIC HEALTH	\$ 2,500	26%
ENVIRONMENTAL HEALTH	\$ 15,750	33%
DEPT. OF SOCIAL SERVICES	\$ 12,500	27%
LIBRARY	\$ 3,750	24%
RECREATION	\$ 15,000	42%
PROJECT MANAGEMENT	\$ 500	196%
PUBLIC TRANSIT	\$ 75,600	16%
RESCUE SQUAD	\$ 10,360	98%
SOLID WASTE	\$ 60,000	29%
CANE CREEK	\$ 5,000	144%
Total ^	\$531,960	
% of utilities & fuel budget	35%	
% of total county budget	0.39%	

* This total includes all general fund line items budgeted, plus Rescue Squad and Court Services, which receive reimbursements. This total does not include any enterprise fund dollars or Public Transit (WCCA) funds.

^ This total includes all general fund line items budgeted plus Rescue Squad, which receives reimbursements. This total does not include any enterprise fund dollars or Public Transit (WCCA) funds.

COLOR CODES:	ENTERPRISE FUNDS	REIMBURSED COSTS	PARTIAL STATE REIMBURSEMENTS
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Total County Budget	\$ 136,489,200	QTR 3-4: % TOTAL FY UTILITY BUDGET USED (July 2017- June 2018 of 100%)
Total County Utility & Fuel Budget*	\$ 1,498,094	
Utilities & Fuel as % of Total County Budget	1.10%	

DEPARTMENT	ELECTRICITY BUDGET	PROPANE/ NATURAL GAS BUDGET	WATER/ SEWER BUDGET	FUEL OIL BUDGET	% TOTAL FY UTILITY BUDGET USED (July 2016 - June 2017 of 100%)
FACILITY SERVICES	\$ 725,000				98%
FACILITY SERVICES		\$ 90,000			159%
FACILITY SERVICES			\$ 53,000		130%
FACILITY SERVICES				\$ 500	32%
COURT FACILITIES	\$ 72,184				87%
COURT FACILITIES		\$ 17,950			82%
COURT FACILITIES			\$ 7,500		129%
Total	\$797,184	\$107,950	\$60,500	\$500	
% of utilities & fuel budget	53%	7%	4%	0.0%	
% of total county budget	0.58%	0.08%	0.04%	0.00%	

ENTERPRISE FUND	ELECTRICITY BUDGET	PROPANE/ NATURAL GAS BUDGET	WATER/ SEWER BUDGET	FUEL OIL BUDGET	% TOTAL FY UTILITY BUDGET USED (July 2016 - June 2017 of 100%)
SOLID WASTE	\$ 20,000				68%
		\$ 800			46%
			\$ 11,500		65%
Total Utility Budget	\$ 32,300				
CANE CREEK	\$ 26,000				109%
		\$ 2,500			34%
			\$ 850		84%
Total Utility Budget	\$ 29,350				
JUSTICE ACADEMY	\$ 3,400				97%
			\$ 130		90%
Total Utility Budget	\$ 3,530				

DEPARTMENT	VEHICLE FUEL COSTS BUDGET	% TOTAL FY FUEL BUDGET USED (July 2016 - June 2017 of 100%)
ASSESSOR	\$ 6,250	83%
FACILITY SERVICES	\$ 14,000	99%
GARAGE	\$ 8,000	1243%
SHERIFF	\$ 312,500	74%
DETENTION	\$ 12,000	115%
FIRE MARSHAL	\$ 8,750	88%
EMERGENCY MEDICAL SERVICES	\$ 86,250	78%
BUILDING SERVICES	\$ 16,750	82%
ANIMAL SERVICES	\$ 1,000	97%
SOIL AND WATER	\$ 1,000	59%
PLANNING	\$ 1,250	15%
CODE ENFORCEMENT	\$ 2,350	51%
COOPERATIVE EXTENSION	\$ 1,500	41%
PUBLIC HEALTH	\$ 2,500	57%
ENVIRONMENTAL HEALTH	\$ 15,750	70%
DEPT. OF SOCIAL SERVICES	\$ 12,500	57%
LIBRARY	\$ 3,750	53%
RECREATION	\$ 15,000	87%
PROJECT MANAGEMENT	\$ 500	460%
PUBLIC TRANSIT	\$ 75,600	40%
RESCUE SQUAD	\$ 10,360	216%
SOLID WASTE	\$ 60,000	71%
CANE CREEK	\$ 5,000	266%
Total ^	\$531,960	
% of utilities & fuel budget	35%	
% of total county budget	0.39%	

* This total includes all general fund line items budgeted, plus Rescue Squad and Court Services, which receive reimbursements. This total does not include any enterprise fund dollars or Public Transit (WCCA) funds.

^ This total includes all general fund line items budgeted plus Rescue Squad, which receives reimbursements. This total does not include any enterprise fund dollars or Public Transit (WCCA) funds.

COLOR CODES:

ENTERPRISE FUNDS	REIMBURSED COSTS	PARTIAL STATE REIMBURSEMENTS
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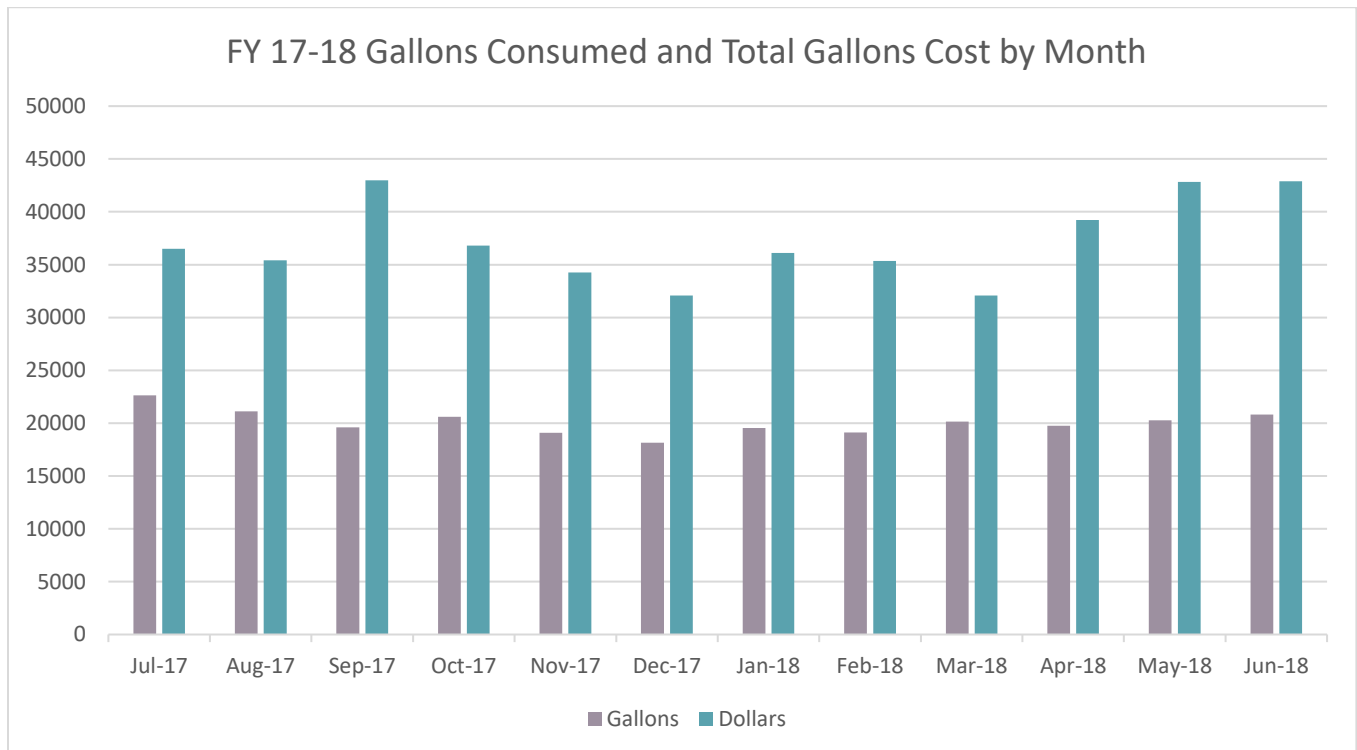
Fuel Consumption FY 17-18: Gallons and Costs

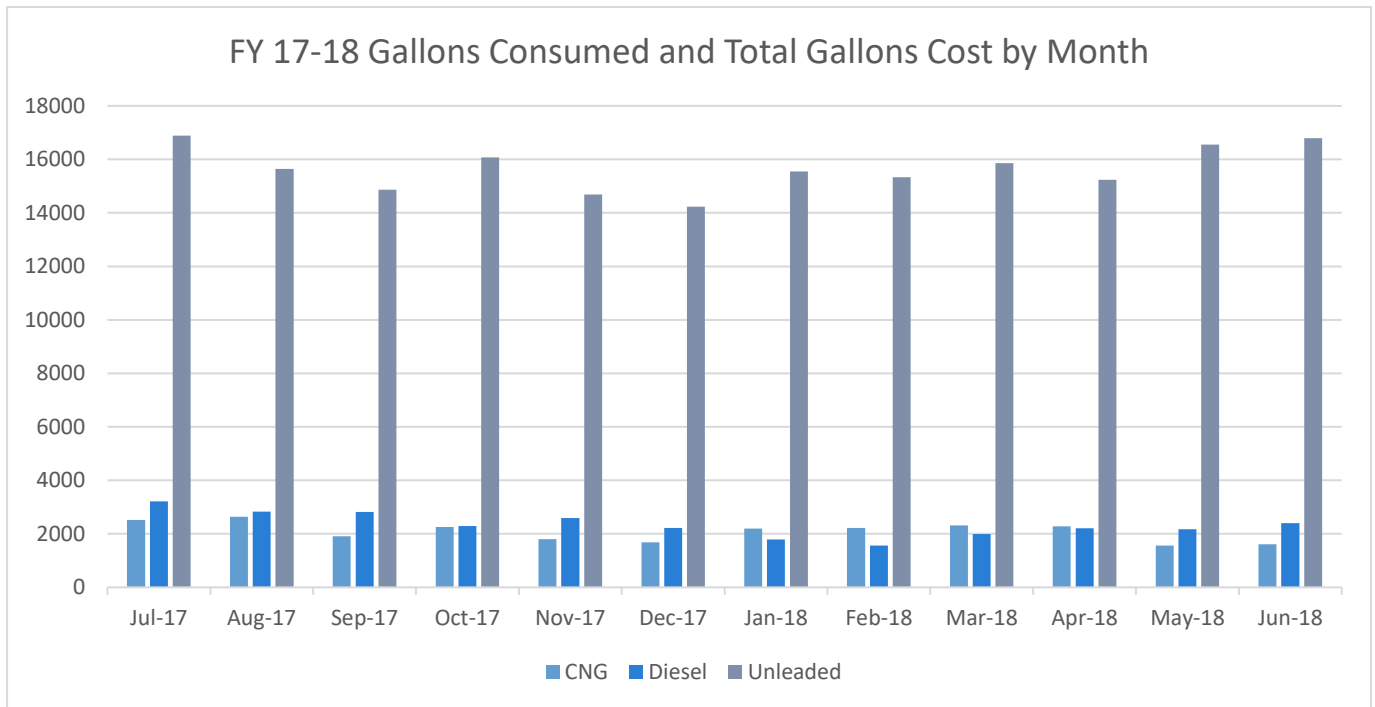
The graphs below display the fuel consumption across all Henderson County departments (including enterprise funds and the departments that receive reimbursements) from July 2017 until June 2018. The types of fuel include unleaded, diesel, and compressed natural gas (CNG). It is important to note that entire fuel usage of two enterprise funds, Solid Waste and Cane Creek Sewer District, and are not fully accounted for in these findings. These departments use an on-site fueling station at the Solid Waste facility for off-road dyed diesel to fuel heavy equipment and other unleaded fueled vehicles used only on the properties. Both departments fuel with CNG as needed at the Williams Street station and these gallons are accounted for in the following data.

The graph titled “FY 17-18 Gallons Consumed and Total Gallons Cost by Month” shows the number of gallons per month consumed across all county departments relative to the funds spent on fuel monthly. *In total, county departments consumed just over 240,833 gallons of all fuels at a cost of about \$446,545 (not considering credit card and other processing or purchase fees). This is a 1% decrease from last year’s fuel costs.*

On average, county departments consumed 20,069 gallons of fuel (diesel, unleaded, and CNG) at a cost of about \$37,212 per month. The highest use months in the 17-18 FY were September May and June. This data is displayed in the graph titled “FY 17-18 Monthly Gallons Consumed by Fuel Type.”

These high-volume months were likely due to a variety of factors.





In comparing the county's consumption of fuel (all types by all departments) from last fiscal year, CNG usage decreased from one year to the next by 18%, diesel decreased by 23%, and unleaded increased by 7%. The annual total gallons over this 3-year period are shown in the graph below. The CNG pumps had to be replaced last year and may have contributed to the decrease in CNG. The decrease in diesel could have occurred from CNG substitution.

